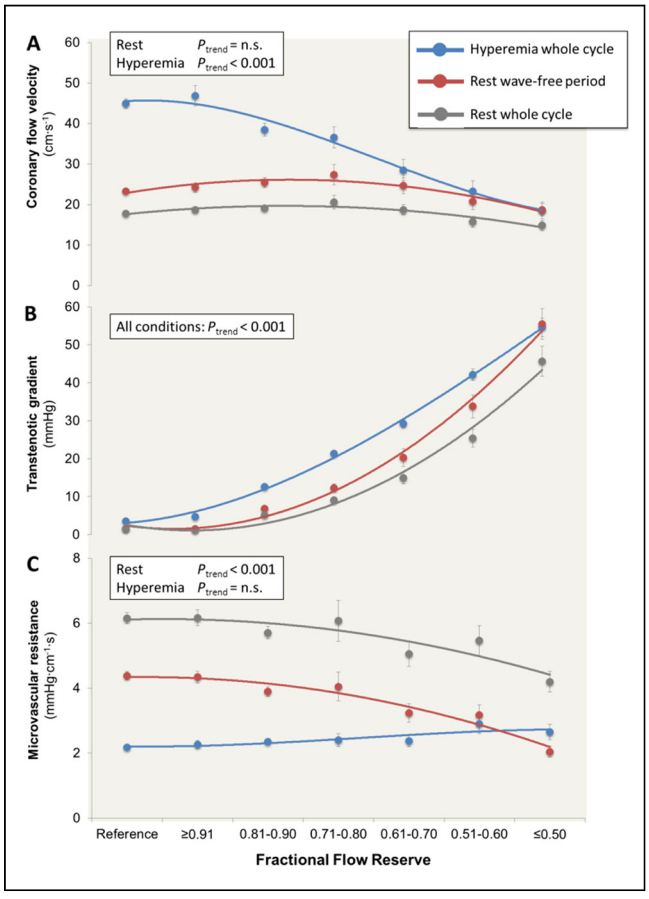

CONCLUSION With progressive stenosis severity, an increased TG at rest is observed, while stable coronary flow is maintained by compensatory reduction of MVR. This demonstrates coronary autoregulation and explains why resting pressure can detect the hemodynamic stenosis significance.

TCTAP A-109

Accounting for Right Atrial Pressure in the Calculation of Fractional Flow Reserve Significantly Increases the Number of Physiologically Significant Stenoses Suitable for Revascularization

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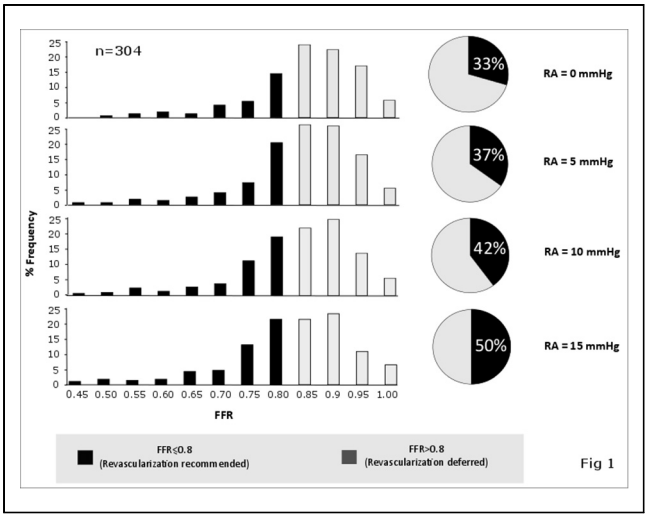
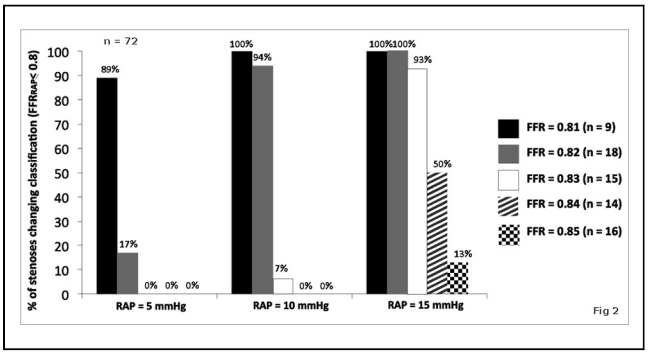
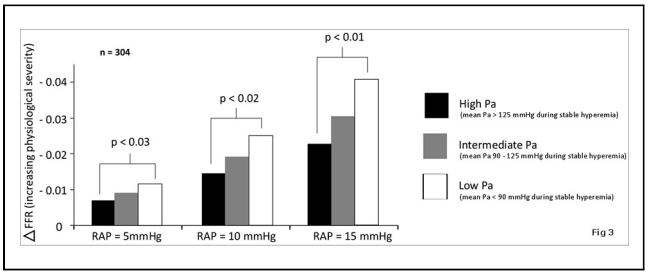
BACKGROUND Right atrial pressure (RAP) was included in the original, validated FFR equations, but is now omitted from clinical use with a presumed negligible effect. In this real-world cohort, we investigate the effects omission of RAP has on the revascularization decisions made in everyday practice.

METHODS 304 coronary stenoses underwent coronary angiography with FFR. Aortic (Pa) and distal intracoronary (Pd) pressures were calculated. FFR was calculated with the simplified equation Pd / Pa, and also after accounting for RAPs (Pd - RAP / Pa - RAP) between 0 - 15 mmHg. Changes in classification, according to $FFR_{RAP} \leq 0.80$, were calculated and the impact on revascularization decision making assessed.

RESULTS Mean FFR of the cohort was 0.83 (± 0.09). When RAP was included, FFR was always lower. Mean FFR decreased to 0.82, 0.81 and 0.79 at RAP of 5, 10 and 15mmHg respectively, reaching statistical significance at RAP ≥ 7mmHg ($p = 0.04$). Inclusion of RAP increased the proportion of stenoses changing classification ($FFR_{RAP} \leq 0.80$) by 4%, 9% and 17% at RAP 5, 10 and 15 mmHg respectively (Fig 1). These represented potentially missed cases for appropriate revascularization and were demonstrated up to a FFR value of 0.85 (Fig 2). This effect was magnified at lower aortic (Pa) pressures (Fig 3). Only a FFR > 0.83 ensured 'non-significant' stenoses did not undergo classification switch at physiological RAPs (< 8 mmHg).







CONCLUSION FFR in its current form (Pd / Pa) systematically underestimates true stenosis severity. FFR ≤ 0.83 can be significant at physiological values of RAP. Using a RAP of 0 mmHg should be abandoned in favor of routine measurement of RAP. When not feasible, to avoid potential missed PCI cases, a physiological estimate of RAP (~8 mmHg) should be used in the automated console calculation of FFR.